#8

OIPE

RAW SEQUENCE LISTING DATE: 07/25/2001 PATENT APPLICATION: US/09/771,382 TIME: 12:36:39

Input Set : A:\8795\_24U1.txt

Output Set: N:\CRF3\07252001\I771382.raw

```
3 <110> APPLICANT: Peak, Ian
        Jennings, Michael
 6 <120> TITLE OF INVENTION: MODIFIED SURFACE ANTIGEN
 8 <130> FILE REFERENCE: 8795-24U1
10 <140> CURRENT APPLICATION NUMBER: US 09/771,382
11 <141> CURRENT FILING DATE: 2001-01-25
13 <150> PRIOR APPLICATION NUMBER: US 60/177,917
14 <151> PRIOR FILING DATE: 2000-01-25
16 <160> NUMBER OF SEQ ID NOS: 52
18 <170> SOFTWARE: PatentIn version 3.0
                                                          ENTERED
20 <210> SEQ ID NO: 1
21 <211> LENGTH: 591
22 <212> TYPE: PRT
23 <213> ORGANISM: Neisseria meningitidis
25 <400> SEQUENCE: 1
27 Met Asn Lys Ile Tyr Arg Ile Ile Trp Asn Ser Ala Leu Asn Ala Trp
30 Val Val Val Ser Glu Leu Thr Arg Asn His Thr Lys Arg Ala Ser Ala
                                   25
33 Thr Val Lys Thr Ala Val Leu Ala Thr Leu Leu Phe Ala Thr Val Gln
36 Ala Ser Ala Asn Asn Glu Glu Glu Glu Asp Leu Tyr Leu Asp Pro
                           55
39 Val Gln Arg Thr Val Ala Val Leu Ile Val Asn Ser Asp Lys Glu Gly
42 Thr Gly Glu Lys Glu Lys Val Glu Glu Asn Ser Asp Trp Ala Val Tyr
                                       90
45 Phe Asn Glu Lys Gly Val Leu Thr Ala Arg Glu Ile Thr Leu Lys Ala
               100
                                   105
48 Gly Asp Asn Leu Lys Ile Lys Gln Asn Gly Thr Asn Phe Thr Tyr Ser
                               120
51 Leu Lys Lys Asp Leu Thr Asp Leu Thr Ser Val Gly Thr Glu Lys Leu
                           135
                                               140
54 Ser Phe Ser Ala Asn Gly Asn Lys Val Asn Ile Thr Ser Asp Thr Lys
                       150
57 Gly Leu Asn Phe Ala Lys Glu Thr Ala Gly Thr Asn Gly Asp Thr Thr
                   165
                                       170
60 Val His Leu Asn Gly Ile Gly Ser Thr Leu Thr Asp Thr Leu Leu Asn
                                   185
63 Thr Gly Ala Thr Thr Asn Val Thr Asn Asp Asn Val Thr Asp Asp Glu
                               200
          195
66 Lys Lys Arg Ala Ala Ser Val Lys Asp Val Leu Asn Ala Gly Trp Asn
                           215
      210
69 Ile Lys Gly Val Lys Pro Gly Thr Thr Ala Ser Asp Asn Val Asp Phe
                      230
                                           235
72 Val Arg Thr Tyr Asp Thr Val Glu Phe Leu Ser Ala Asp Thr Lys Thr
```

250

RAW SEQUENCE LISTING DATE: 07/25/2001 PATENT APPLICATION: US/09/771,382 TIME: 12:36:39

Input Set : A:\8795\_24U1.txt

```
75 Thr Thr Val Asn Val Glu Ser Lys Asp Asn Gly Lys Lys Thr Glu Val
                                   265
               260
78 Lys Ile Gly Ala Lys Thr Ser Val Ile Lys Glu Lys Asp Gly Lys Leu
                              280
79 275
81 Val Thr Gly Lys Asp Lys Gly Glu Asn Gly Ser Ser Thr Asp Glu Gly
                           295
84 Glu Gly Leu Val Thr Ala Lys Glu Val Ile Asp Ala Val Asn Lys Ala
87 Gly Trp Arg Met Lys Thr Thr Ala Asn Gly Gln Thr Gly Gln Ala
                   325
                                       330
90 Asp Lys Phe Glu Thr Val Thr Ser Gly Thr Asn Val Thr Phe Ala Ser
                                  345
93 Gly Lys Gly Thr Thr Ala Thr Val Ser Lys Asp Asp Gln Gly Asn Ile
94 355
                               360
96 Thr Val Met Tyr Asp Val Asn Val Gly Asp Ala Leu Asn Val Asn Gln
                           375
                                               380
99 Leu Gln Asn Ser Gly Trp Asn Leu Asp Ser Lys Ala Val Ala Gly Ser
                        390
                                           395
102 Ser Gly Lys Val Ile Ser Gly Asn Val Ser Pro Ser Lys Gly Lys Met
                    405
                                        410
105 Asp Glu Thr Val Asn Ile Asn Ala Gly Asn Asn Ile Glu Ile Thr Arg
                                    425
108 Asn Gly Lys Asn Ile Asp Ile Ala Thr Ser Met Thr Pro Gln Phe Ser
                                440
           435
111 Ser Val Ser Leu Gly Ala Gly Ala Asp Ala Pro Thr Leu Ser Val Asp
                           455
114 Gly Asp Ala Leu Asn Val Gly Ser Lys Lys Asp Asn Lys Pro Val Arg
                        470
                                           475
117 Ile Thr Asn Val Ala Pro Gly Val Lys Glu Gly Asp Val Thr Asn Val
                                        490
                    485
120 Ala Gln Leu Lys Gly Val Ala Gln Asn Leu Asn Asn Arg Ile Asp Asn
                500
                                    505
123 Val Asp Gly Asn Ala Arg Ala Gly Ile Ala Gln Ala Ile Ala Thr Ala
            515
126 Gly Leu Val Gln Ala Tyr Leu Pro Gly Lys Ser Met Met Ala Ile Gly
129 Gly Gly Thr Tyr Arg Gly Glu Ala Gly Tyr Ala Ile Gly Tyr Ser Ser
                        550
                                            555
132 Ile Ser Asp Gly Gly Asn Trp Ile Ile Lys Gly Thr Ala Ser Gly Asn
                    565
                                       570
135 Ser Arg Gly His Phe Gly Ala Ser Ala Ser Val Gly Tyr Gln Trp
                580
                                    585
136
138 <210> SEQ ID NO: 2
139 <211> LENGTH: 592
140 <212> TYPE: PRT
141 <213> ORGANISM: Neisseria meningitidis
143 <400> SEQUENCE: 2
145 Met Asn Lys Ile Tyr Arg Ile Ile Trp Asn Ser Ala Leu Asn Ala Trp
                                        10
146 1
```

RAW SEQUENCE LISTING
PATENT APPLICATION: US/09/771,382

DATE: 07/25/2001
TIME: 12:36:39

Input Set : A:\8795\_24U1.txt

148 149	Val	Ala	Val	Ser 20	Glu	Leu	Thr	Arg	Asn 25	His	Thr	Lys	Arg	Ala 30	Ser	Ala
151	Thr	Val	_		Ala	Val	Leu			Leu	Leu	Phe			Val	Gln
152		3	35	m }	3	c1	3.00	40	C1	c1	C1	Tou	45	Cor	Val	Cln
155		50					55					60			Val	
157 158		Ser	Val	Val	Gly	Ser 70	Ile	Gln	Ala	Ser	Met 75	Glu	Gly	Ser	Val	Glu 80
		Glu	Thr	Ile	Ser	Leu	Ser	Met	Thr	Asn	Asp	Ser	Lys	Glu	Phe	Val
161					85					90					95	
163	Asp	Pro	Tyr	Ile	Val	Val	Thr	Leu		Ala	Gly	Asp	Asn		Lys	Ile
164				100					105	_				110		
	Lys	Gln		Thr	Asn	Glu	Asn		Asn	Ala	Ser	Ser		Thr	Tyr	Ser
167	_		115	•	<b>.</b>	m 1	01	120	т1.	3	17 n 1	C1	125	C1.,	T *** C	T 011
170		130					135					140			Lys	
172	Ser	Phe	Gly	Ala	Asn	Gly	Lys	Lys	Val	Asn		Ile	Ser	Asp	Thr	
	145					150			_	_	155					160
	Gly	Leu	Asn	Phe		Lys	Glu	Thr	Ala		Thr	Asn	GLy	Asp	Thr	Thr
176		•	_	_	165	-1.	<b>a1</b>	<b>a</b>	m 1	170	mla -a	1	Wat	T 0	175	Nan
	·vaı	HIS	ьеи	180	GTĀ	тте	GIY	ser	185	ьeu	THE	ASP	мес	190	Leu	ASII
179	Пhr	C1 v	λla		Пhr	λen	Va 1	Thr	-	Aen	Δen	Va 1	Thr		Asp	Glu
182	1 111	GIY	195	1111	1111	ASII	Vai	200		изр	AJII	Vul	205	p	пор	Olu
	Lvs	Lvs		Ala	Ala	Ser	Val		Asp	Val	Leu	Asn		Gly	Trp	Asn
185		210	5				215	-1-	- 1			220		-	-	
187	Ile	Lys	Gly	Val	Lys	Pro	Gly	Thr	Thr	Ala	Ser	Asp	Asn	Val	Asp	Phe
	225					230					235					240
190	Val	Arg	Thr	Tyr		Thr	Val	Glu	Phe		Ser	Ala	Asp	Thr	Lys	Thr
191					245	_ •	_	_	_	250	~ 1	_	_	m1	255	**- 1
	Thr	Thr	Val		Val	Glu	Ser	Lys		Asn	GIY	Lys	ьys	270	Glu	vaı
194	T	т1 о	C1	260	Tyra	mb.r	cor	Val	265 T10	Tvc	G1u	Luc	λen	•	Lys	T.011
196	гуѕ	TIE	275	ніа	гу	TIIT	SEL	280		цуз	GIU	БУЗ	285	GLY	цуз	пси
	Val	Thr		Lvs	Glv	Lvs	Glv		Asn	Glv	Ser	Ser		Asp	Glu	Gly
200		290	<b>V</b> -1	-1-	<b>-</b> 1	-1-	295			1		300		-		•
202	Glu	Gly	Leu	Val	Thr	Ala	Lys	Glu	Val	Ile	Asp	Ala	Val	Asn	Lys	Ala
203	305	_				310					315					320
205	Gly	${\tt Trp}$	Arg	Met	Lys	Thr	Thr	Thr	Ala		Gly	Gln	Thr	Gly	Gln	Ala
206					325					330		_		_	335	_
	Asp	Lys	Phe		Thr	Val	Thr	Ser		Thr	Lys	Val	Thr		Ala	Ser
209		_		340			<b>1</b>	**- 7	345	T	3	2		350	7 ~ ~	Tl.
	GTĀ	Asn	_	Thr	Thr	Ala	Thr	360	ser	ьуѕ	ASP	ASP	365	сту	Asn	ııe
212	Thr	Wa l	355	Trans.	λen	Va 1	Δen		Glv	Δen	Δla	Leu		Va 1	Asn	Gln
214	TIIT	370	пЛэ	- A -	roh	, uı	375	741	O T Y	1125	111U	380				
	Leu		Asn	Ser	Gly	Trp		Leu	Asp	Ser	Lys		Val	Ala	Gly	Ser
	385				4	390			•		395			٠	-	400
		Gly	Lys	Val	Ile	Ser	${\tt Gly}$	Asn	Val	Ser	Pro	Ser	Lys	Gly	Lys	Met

RAW SEQUENCE LISTING DATE: 07/25/2001 PATENT APPLICATION: US/09/771,382 TIME: 12:36:39

Input Set : A:\8795\_24U1.txt

221					405					410					415	
	Asp	Glu	Thr	Val		Ile	Asn	Ala	Gly		Asn	Ile	Glu	Ile	Thr	Arq
224	-			420					425					430		,
226	Asn	Gly	Lys	Asn	Ile	Asp	Ile	Ala	Thr	Ser	Met	Thr	Pro	Gln	Phe	Ser
227		_	435			-		440					445			
229	Ser	Val	Ser	Leu	Gly	Ala	Gly	Ala	Asp	Ala	Pro	Thr	Leu	Ser	Val	Asp
230		450					455					460				
232	Asp	Glu	Gly	Ala	Leu	Asn	Val	Gly	Ser	Lys	Asp	Ala	Asn	Lys	Pro	Val
233	465					470					475					480
235	Arg	Ile	Thr	Asn	Val	Ala	Pro	Gly	Val	Lys	Glu	Gly	Asp	Val	Thr	Asn
236					485					490					495	
238	Val	Ala	Gln		Lys	Gly	Val	Ala	Gln	Asn	Leu	Asn	Asn	Arg	Ile	Asp
239				500					505					510	•	
	Asn	Val	Asn	Gly	Asn	Ala	Arg	Ala	Gly	Ile	Ala	Gln		Ile	Ala	Thr
242	_		515		_			520					525		_	_
	Ala	_	Leu	Val	Gln	Ala	_	Leu	Pro	Gly	Lys		Met	Met	Ala	Ile
245		530			_	_	535					540			_	_
	Gly	GLy	GLy	Thr	Tyr		GLy	GLu	Ala	GLY	_	Ala	ITe	Gly	Tyr	
	545	7	_		<b>a</b> 3	550	_	_	-1		555	~ 1	1		_	560
	Ser	ITe	Ser	Ala		GTĀ	Asn	Trp	тте		Lys	GTA	Thr	Ala		GIY
251		<b>a</b>	3	<b>01</b> 4-	565	Dl	<b>a</b> 1	<b>.</b> 1 -	<b>a</b>	570	<b>a</b>	77-3	<b>a</b> 1		575	m
	Asn	ser	Arg		HIS	Pue	стА	Ата	585	Ата	ser	vai	СТУ		GIII	ттр
254	Z216	٥١ م	20 TI	580	. 2				202					590		
	<210															
				H: 58	39											
258	<212	2> T	PE:	PRT	•	sser-	ia me	en i na	ritio	lie					-	
258 259	<212 <213	2> T 3> OI	PE:	PRT ISM:	•	sseri	ia me	ening	gitio	lis						
258 259 261	<213 <213 <400	2> TY 3> OF 0> SI	PE: RGAN EQUE!	PRT ISM: NCE:	Neis						Ser	Ala	Leu	Asn	Ala	Trp
258 259 261	<213 <213 <400 Met	2> TY 3> OF 0> SI	PE: RGAN EQUE!	PRT ISM: NCE:	Neis						Ser	Ala	Leu	Asn	Ala 15	Trp
258 259 261 263 264	<212 <213 <400 Met 1	2> TY 3> OI 0> SI Asn	(PE: RGANI EQUE! Lys	PRT ISM: NCE: Ile	Neis 3 Tyr 5	Arg	Ile	Ile	Trp	Asn 10					15	_
258 259 261 263 264	<213 <213 <400 Met	2> TY 3> OI 0> SI Asn	(PE: RGANI EQUE! Lys	PRT ISM: NCE: Ile	Neis 3 Tyr 5	Arg	Ile	Ile	Trp	Asn 10					15	_
258 259 261 263 264 266 267	<212 <213 <400 Met 1	2> TY 3> OF 0> SI Asn Val	(PE: RGANI EQUE! Lys Val	PRT ISM: NCE: Ile Ser 20	Neis 3 Tyr 5 Glu	Arg Leu	Ile Thr	Ile Arg	Trp Asn 25	Asn 10 His	Thr	Lys	Arg	Ala 30	15 Ser	Ala
258 259 261 263 264 266 267	<213 <213 <400 Met 1 Val	2> TY 3> OF 0> SI Asn Val	(PE: RGANI EQUE! Lys Val	PRT ISM: NCE: Ile Ser 20	Neis 3 Tyr 5 Glu	Arg Leu	Ile Thr	Ile Arg	Trp Asn 25	Asn 10 His	Thr	Lys	Arg	Ala 30	15 Ser	Ala
258 259 261 263 264 266 267 269 270	<213 <213 <400 Met 1 Val	2> T: 3> OH 0> SH Asn Val	YPE: RGANI EQUEN Lys Val Ala 35	PRT ISM: NCE: Ile Ser 20 Thr	Neis 3 Tyr 5 Glu	Arg Leu Val	Ile Thr Leu	Ile Arg Ala 40	Trp Asn 25 Thr	Asn 10 His Leu	Thr Leu	Lys Ser	Arg Ala 45	Ala 30 Thr	15 Ser Val	Ala Gln
258 259 261 263 264 266 267 269 270 272 273	<213 <213 <400 Met 1 Val Thr	2> TY 3> OI 0> SI Asn Val Val Asn 50	YPE: RGANI EQUEN Lys Val Ala 35 Ala	PRT ISM: NCE: Ile Ser 20 Thr	Neis 3 Tyr 5 Glu Ala	Arg Leu Val Thr	Ile Thr Leu Asp 55	Ile Arg Ala 40 Glu	Trp Asn 25 Thr	Asn 10 His Leu Glu	Thr Leu Glu	Lys Ser Leu 60	Arg Ala 45 Glu	Ala 30 Thr Ser	15 Ser Val Val	Ala Gln Ala
258 259 261 263 264 266 267 269 270 272 273	<212 <213 <400 Met 1 Val	2> TY 3> OI 0> SI Asn Val Val Asn 50	YPE: RGANI EQUEN Lys Val Ala 35 Ala	PRT ISM: NCE: Ile Ser 20 Thr	Neis 3 Tyr 5 Glu Ala	Arg Leu Val Thr	Ile Thr Leu Asp 55	Ile Arg Ala 40 Glu	Trp Asn 25 Thr	Asn 10 His Leu Glu	Thr Leu Glu	Lys Ser Leu 60	Arg Ala 45 Glu	Ala 30 Thr Ser	15 Ser Val Val	Ala Gln Ala
258 259 261 263 264 266 267 269 270 272 273 275 276	<213 <400 Met 1 Val Thr Ala Arg 65	2> TY 3> OF 0> SI Asn Val Val Asn 50 Ser	YPE: RGANI EQUEN Lys Val Ala 35 Ala	PRT ISM: NCE: Ile Ser 20 Thr Thr	Neis 3 Tyr 5 Glu Ala Asp	Arg Leu Val Thr Leu 70	Ile Thr Leu Asp 55 Gln	Ile Arg Ala 40 Glu Phe	Trp Asn 25 Thr Asp Met	Asn 10 His Leu Glu Ile	Thr Leu Glu Asp 75	Lys Ser Leu 60 Lys	Arg Ala 45 Glu Glu	Ala 30 Thr Ser Gly	15 Ser Val Val Asn	Ala Gln Ala Gly 80
258 259 261 263 264 266 267 279 270 272 273 275 276 278	<213 <400 Met 1 Val Thr Ala	2> TY 3> OF 0> SI Asn Val Val Asn 50 Ser	YPE: RGANI EQUEN Lys Val Ala 35 Ala	PRT ISM: NCE: Ile Ser 20 Thr Thr Leu Ser	Neis 3 Tyr 5 Glu Ala Asp Val	Arg Leu Val Thr Leu 70 Gly	Ile Thr Leu Asp 55 Gln	Ile Arg Ala 40 Glu Phe	Trp Asn 25 Thr Asp Met Gly	Asn 10 His Leu Glu Ile Trp	Thr Leu Glu Asp 75	Lys Ser Leu 60 Lys	Arg Ala 45 Glu Glu	Ala 30 Thr Ser Gly	15 Ser Val Val Asn	Ala Gln Ala Gly 80
258 259 261 263 264 266 267 270 272 273 275 276 278 279	<213 <400 Met 1 Val Thr Ala Arg 65 Glu	2> TY 3> OF 3> OF 0> SI Asn Val Val Asn 50 Ser	YPE: RGANI EQUEN Lys Val Ala 35 Ala Ala Glu	PRT ISM: NCE: Ile Ser 20 Thr Thr Leu Ser	Neis 3 Tyr 5 Glu Ala Asp Val Thr	Arg Leu Val Thr Leu 70 Gly	Ile Thr Leu Asp 55 Gln Asp	Ile Arg Ala 40 Glu Phe Ile	Trp Asn 25 Thr Asp Met Gly	Asn 10 His Leu Glu Ile Trp 90	Thr Leu Glu Asp 75 Ser	Lys Ser Leu 60 Lys	Arg Ala 45 Glu Glu Tyr	Ala 30 Thr Ser Gly	15 Ser Val Val Asn Asp 95	Ala Gln Ala Gly 80 Asp
258 259 261 263 264 266 267 270 272 273 275 276 278 279 281	<213 <400 Met 1 Val Thr Ala Arg 65	2> TY 3> OF 3> OF 0> SI Asn Val Val Asn 50 Ser	YPE: RGANI EQUEN Lys Val Ala 35 Ala Ala Glu	PRT ISM: NCE: Ile Ser 20 Thr Thr Leu Ser Leu	Neis 3 Tyr 5 Glu Ala Asp Val Thr	Arg Leu Val Thr Leu 70 Gly	Ile Thr Leu Asp 55 Gln Asp	Ile Arg Ala 40 Glu Phe Ile	Trp Asn 25 Thr Asp Met Gly Val	Asn 10 His Leu Glu Ile Trp 90	Thr Leu Glu Asp 75 Ser	Lys Ser Leu 60 Lys	Arg Ala 45 Glu Glu Tyr	Ala 30 Thr Ser Gly Tyr	15 Ser Val Val Asn Asp 95	Ala Gln Ala Gly 80 Asp
258 259 261 263 264 266 267 269 270 272 273 275 276 278 279 281 282	<213 <400 Met 1 Val Thr Ala Arg 65 Glu	2> TY 3> OF 3> OF 0> SI Asn Val Val Asn 50 Ser Ile Asn	YPE: RGANI EQUEN Lys Val Ala 35 Ala Ala Glu Thr	PRT ISM: NCE: Ile Ser 20 Thr Thr Leu Ser Leu 100	Neis 3 Tyr 5 Glu Ala Asp Val Thr 85 His	Arg Leu Val Thr Leu 70 Gly	Ile Thr Leu Asp 55 Gln Asp Ala	Ile Arg Ala 40 Glu Phe Ile	Trp Asn 25 Thr Asp Met Gly Val 105	Asn 10 His Leu Glu Ile Trp 90 Thr	Thr Leu Glu Asp 75 Ser Leu	Lys Ser Leu 60 Lys Ile Lys	Arg Ala 45 Glu Glu Tyr Ala	Ala 30 Thr Ser Gly Tyr Gly 110	15 Ser Val Val Asn Asp 95 Asp	Ala Gln Ala Gly 80 Asp
258 259 261 263 264 266 267 269 270 272 273 275 276 278 279 281 282 284	<213 <400 Met 1 Val Thr Ala Arg 65 Glu	2> TY 3> OF 3> OF 0> SI Asn Val Val Asn 50 Ser Ile Asn	YPE: RGANI RGANI EQUEN Lys Val Ala 35 Ala Ala Glu Thr	PRT ISM: NCE: Ile Ser 20 Thr Thr Leu Ser Leu 100	Neis 3 Tyr 5 Glu Ala Asp Val Thr 85 His	Arg Leu Val Thr Leu 70 Gly	Ile Thr Leu Asp 55 Gln Asp Ala	Ile Arg Ala 40 Glu Phe Ile Thr	Trp Asn 25 Thr Asp Met Gly Val 105	Asn 10 His Leu Glu Ile Trp 90 Thr	Thr Leu Glu Asp 75 Ser Leu	Lys Ser Leu 60 Lys Ile Lys	Arg Ala 45 Glu Glu Tyr Ala Ser	Ala 30 Thr Ser Gly Tyr Gly 110	15 Ser Val Val Asn Asp 95 Asp	Ala Gln Ala Gly 80 Asp
258 259 261 263 264 266 267 269 270 272 273 275 276 278 281 282 284 285	<213 <400 Met 1 Val Thr Ala Arg 65 Glu His	2> TY 3> OF 3> OF 3> OF 3> SF ASN Val Val ASN 50 Ser Ile ASN Lys	YPE: RGANI RGANI EQUEN Lys Val Ala 35 Ala Ala Glu Thr Ile 115	PRT ISM: NCE: Ile Ser 20 Thr Thr Leu Ser Leu 100 Lys	Neis 3 Tyr 5 Glu Ala Asp Val Thr 85 His	Arg Leu Val Thr Leu 70 Gly Gly Ser	Ile Thr Leu Asp 55 Gln Asp Ala Gly	Ile Arg Ala 40 Glu Phe Ile Thr Lys 120	Trp Asn 25 Thr Asp Met Gly Val 105 Asp	Asn 10 His Leu Glu Ile Trp 90 Thr	Thr Leu Glu Asp 75 Ser Leu Thr	Lys Ser Leu 60 Lys Ile Lys	Arg Ala 45 Glu Glu Tyr Ala Ser 125	Ala 30 Thr Ser Gly Tyr Gly 110 Leu	15 Ser Val Val Asn Asp 95 Asp	Ala Gln Ala Gly 80 Asp Asn Lys
258 259 261 263 264 266 267 269 270 272 273 275 276 278 279 281 282 284 285 287	<213 <400 Met 1 Val Thr Ala Arg 65 Glu	2> TY 3> OF 3> OF 3> SF Asn Val Val Asn 50 Ser Ile Asn Lys Leu	YPE: RGANI RGANI EQUEN Lys Val Ala 35 Ala Ala Glu Thr Ile 115	PRT ISM: NCE: Ile Ser 20 Thr Thr Leu Ser Leu 100 Lys	Neis 3 Tyr 5 Glu Ala Asp Val Thr 85 His	Arg Leu Val Thr Leu 70 Gly Gly Ser	Thr Leu Asp 55 Gln Asp Ala Gly Ser	Ile Arg Ala 40 Glu Phe Ile Thr Lys 120	Trp Asn 25 Thr Asp Met Gly Val 105 Asp	Asn 10 His Leu Glu Ile Trp 90 Thr	Thr Leu Glu Asp 75 Ser Leu Thr	Lys Ser Leu 60 Lys Ile Lys Tyr	Arg Ala 45 Glu Glu Tyr Ala Ser 125	Ala 30 Thr Ser Gly Tyr Gly 110 Leu	15 Ser Val Val Asn Asp 95 Asp	Ala Gln Ala Gly 80 Asp Asn Lys
258 259 261 263 264 266 267 269 270 272 273 275 276 278 279 281 282 284 285 287 288	<213 <400 Met 1 Val Thr Ala Arg 65 Glu His Leu Glu	2> TY 3> OF 3> OF 3> OF 3> OF 4 4 SE 4 SE 4 SE 4 SE 4 SE 4 SE 4 SE 4	YPE: RGANI RGANI EQUEN Lys Val Ala 35 Ala Ala Glu Thr Ile 115 Lys	PRT ISM: NCE: Ile Ser 20 Thr Thr Leu Ser Leu 100 Lys Asp	Neis 3 Tyr 5 Glu Ala Asp Val Thr 85 His	Arg Leu Val Thr Leu 70 Gly Gly Ser Thr	Thr Leu Asp 55 Gln Asp Ala Gly Ser 135	Ile Arg Ala 40 Glu Phe Ile Thr Lys 120 Val	Trp Asn 25 Thr Asp Met Gly Val 105 Asp Glu	Asn 10 His Leu Glu Ile Trp 90 Thr Phe	Thr Leu Glu Asp 75 Ser Leu Thr	Lys Ser Leu 60 Lys Ile Lys Tyr Lys 140	Arg Ala 45 Glu Glu Tyr Ala Ser 125 Leu	Ala 30 Thr Ser Gly Tyr Gly 110 Leu	15 Ser Val Val Asn Asp 95 Asp Lys	Ala Gln Ala Gly 80 Asp Asn Lys Gly
258 259 261 263 264 266 267 269 270 272 273 275 276 278 279 281 282 284 285 287 288 290	<213 <400 Met 1 Val Thr Ala Arg 65 Glu His Leu Glu	2> TY 3> OF 3> OF 3> OF 3> OF 4 4 SE 4 SE 4 SE 4 SE 4 SE 4 SE 4 SE 4	YPE: RGANI RGANI EQUEN Lys Val Ala 35 Ala Ala Glu Thr Ile 115 Lys	PRT ISM: NCE: Ile Ser 20 Thr Thr Leu Ser Leu 100 Lys Asp	Neis 3 Tyr 5 Glu Ala Asp Val Thr 85 His	Arg Leu Val Thr Leu 70 Gly Gly Ser Thr	Thr Leu Asp 55 Gln Asp Ala Gly Ser 135	Ile Arg Ala 40 Glu Phe Ile Thr Lys 120 Val	Trp Asn 25 Thr Asp Met Gly Val 105 Asp Glu	Asn 10 His Leu Glu Ile Trp 90 Thr Phe	Thr Leu Glu Asp 75 Ser Leu Thr Glu Asp	Lys Ser Leu 60 Lys Ile Lys Tyr Lys 140	Arg Ala 45 Glu Glu Tyr Ala Ser 125 Leu	Ala 30 Thr Ser Gly Tyr Gly 110 Leu	15 Ser Val Val Asn Asp 95 Asp Lys	Ala Gln Ala Gly 80 Asp Asn Lys Gly Asn
258 259 261 263 264 266 267 269 270 272 273 275 276 278 279 281 282 284 285 287 288 290 291	<213 <400 Met 1 Val Thr Ala Arg 65 Glu His Leu Glu	2> TY 3> OF 3> OF 0> SF Asn Val Val Asn 50 Ser Ile Asn Lys Leu 130 Asn	YPE: RGANI RGANI EQUEN Lys Val Ala 35 Ala Ala Glu Thr Ile 115 Lys Gly	PRT ISM: NCE: 11e Ser 20 Thr Thr Leu Ser Leu 100 Lys Asp Asn	Neis 3 Tyr 5 Glu Ala Asp Val Thr 85 His Gln Leu	Arg Leu Val Thr Leu 70 Gly Gly Ser Thr Val 150	Thr Leu Asp 55 Gln Asp Ala Gly Ser 135 Asn	Ile Arg Ala 40 Glu Phe Ile Thr Lys 120 Val	Trp Asn 25 Thr Asp Met Gly Val 105 Asp Glu Thr	Asn 10 His Leu Glu Ile Trp 90 Thr Phe Thr	Thr Leu Glu Asp 75 Ser Leu Thr Glu Asp 155	Lys Ser Leu 60 Lys Ile Lys Tyr Lys 140 Thr	Arg Ala 45 Glu Glu Tyr Ala Ser 125 Leu Lys	Ala 30 Thr Ser Gly Tyr Gly 110 Leu Ser Gly	15 Ser Val Val Asn Asp 95 Asp Lys Phe Leu	Ala Gln Ala Gly 80 Asp Asn Lys Gly Asn 160

RAW SEQUENCE LISTING DATE: 07/25/2001 PATENT APPLICATION: US/09/771,382 TIME: 12:36:39

Input Set : A:\8795\_24U1.txt

Output Set: N:\CRF3\07252001\1771382.raw

294					165					170					175	_
296	Asn	Gly	Ile	_	Ser	${ t Thr}$	Leu	Thr		Thr	Leu	Ala	Gly	Ser	Ser	Ala
297				180					185					190		
299	Ser	His	Val	Asp	Ala	Gly	Asn	Gln	Ser	Thr	His	Tyr	Thr	Arg	Ala	Ala
300			195					200					205			
302	Ser	Ile	Lys	Asp	Val	Leu	Asn	Ala	Gly	$\mathtt{Trp}$	Asn	Ile	Lys	Gly	Val	Lys
303		210					215					220				
305	Thr	Gly	Ser	Thr	Thr	Gly	Gln	Ser	Glu	Asn	Val	Asp	Phe	Val	Arg	Thr
306	225			•		230					235					240
308	Tyr	Asp	Thr	Val	Glu	Phe	Leu	Ser	Ala	Asp	Thr	Lys	Thr	Thr	Thr	Val
309					245					250					255	
311	Asn	Val	Glu	Ser	Lys	Asp	Asn	Gly	Lys	Arg	Thr	Glu	Val	Lys	Ile	Gly
312				260					265					270	*	
314	Ala	Lys	Thr	Ser	Val	Ile	Lys	Glu	Lys	Asp	Gly	Lys	Leu	Val	Thr	Gly
315			275					280					285			
317	Lys	Gly	Lys	Gly	Glu	Asn	Gly	Ser	Ser	Thr	Asp	Glu	Gly	Glu	Gly	Leu
318	-	290	-	-			295				_	300	_			
320	Val	Thr	Ala	Lys	Glu	Val	Ile	Asp	Ala	Val	Asn	Lys	Ala	Gly	Trp	Arg
	305			-		310		-			315	_		_	_	320
323	Met	Lys	Thr	Thr	Thr	Ala	Asn	Gly	Gln	Thr	Gly	Gln	Ala	Asp	Lys	Phe
324		•			325					330	-			-	335	
	Glu	Thr	Val	Thr	Ser	Glv	Thr	Lvs	Val	Thr	Phe	Ala	Ser	Gly	Asn	Gly
327				340		1		-1-	345					350		
	Thr	Thr	Ala		Val	Ser	Lvs	Asp		Gln	Glv	Asn	Ile		Val	Lvs
330			355		,		-1-	360			1		365			_1 -
	Tvr	Asp		Asn	Va 1	Glv	Asp		Leu	Asn	Va 1	Asn	Gln	Leu	Gln	Asn
333	-1-	370				0.21	375					380				
	Ser		Trp	Asn	Len	Asp		Lvs	Ala	Va 1	Ala		Ser	Ser	Glv	Lvs
	385	011	115	11011	шеч	390	DCI			,	395	011	D01	701		400
		Tle	Ser	Glv	Asn		Ser	Pro	Ser	Lvs		Lvs	Met	Asp	Glu	
339	vai	110	JCI	OLY	405	vai	DCI	110	DCI	410	011	ц	1100	nop.	415	1111
	Va 1	Δsn	Tle	Δgn		Glv	Δsn	Asn	Tle		Tle	Thr	Arg	Asn		Lvs
342	vai	11011	110	420	niu	O <sub>1</sub>	21511	11011	425	O L u	110		1119	430	011	110
	Δen	Tle	Δsn		Δla	Thr	Ser	Met		Pro	Gln	Phe	Ser		Val	Ser
345	ASII	110	435	110	ALU	1111	DCI	440	1111	110	0111	1110	445	JCI	· u ·	DCI
	T.011	G1 v		Glv	Δla	Δgn	Δla		Thr	T.em	Ser	Val	Asp	Asn	Glu	Glv
348	пец	450	AIU	Gry	Ата	АЗР	455	110	1111	nca	DCI	460	пор	пор	Olu	GIY
	λla		λan	Wa 1	G1 <sub>V</sub>	Sar		Man	λla	λen	Lvc		Val	Δra	Τlם	Thr
351		пеп	ASII	val	GIY	470	пÃЭ	изр	. Ala	nou	475	FIO	Val	лту	TTE	480
		Wa 1	λla	Dro	C1v		Tvc	Clu	C1v	λen		Thr	Asn	Val	λla	
354	ASII	Val	Ата	PIO	485	Val	пуз	GIU	GIY	490	Vai	T 111	LOII	Val	495	GIII
	T 0	T	C1	17.01		Cl.	) an	T 011	N an		7 ~~	T10	Nan	λan		A an
	теп	гуѕ	GIY	500	Ald	GIII	ASII	ьеи	505	ASII	Ary	116	Asp	510	val	ASII
357	C1	1	270		71.	01	т1.	71-		212	т1.	λl-	⊞h x		C111	Lou
	стА	ASII		Arg	HId	атй	тте		GTII	мта	TIE	мта	Thr 525	мта	атА	ьеu
360	n 1 -	<b>01</b>	515	m	т	Desc	C1	520	00~	Wo+	Mot	7 J ~		C1	C1	C1
	АТа		Ата	ryr	ьeu	PLO		гÀг	ser	met	met		Ile	стλ	σтλ	стА
363	m l	530	T	<b>a</b> 1	<b>01</b>	a 7 -	535	m	27~	т1-	C1	540	C	0	т1 ^	Com
		тyr	ren	стА	GIU		GTÀ	ryr	АТа	тте		IÀI	Ser	ser	тте	
366	045					550					555					560

Use of n and/or Xaa has been detected in the Sequence Listing. Review the Sequence Listing to insure a corresponding explanation is presented in the <220> to <223> fields of each sequence using n or Xaa.

## VERIFICATION SUMMARY DATE: 07/25/2001 PATENT APPLICATION: US/09/771,382 TIME: 12:36:40

Input Set : A:\8795\_24U1.txt

```
L:1228 M:258 W: Mandatory Feature missing, <222> not found for SEQ ID#:11
L:1228 \ M:341 \ W: (46) "n" or "Xaa" used, for SEQ ID#:11
L:1231 M:258 W: Mandatory Feature missing, <222> not found for SEQ ID#:11
L:1231 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11
L:1234 M:258 W: Mandatory Feature missing, <222> not found for SEQ ID#:11
L:1234 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11
L:1237 M:258 W: Mandatory Feature missing, <222> not found for SEQ ID#:11
\tt L\!:\!1237\ M\!:\!341\ W\!: (46) "n" or "Xaa" used, for SEQ ID#:11
L:1240 M:258 W: Mandatory Feature missing, <222> not found for SEQ ID#:11
L:1240 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11
L:1243 M:258 W: Mandatory Feature missing, <222> not found for SEQ ID#:11
L:1243 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11
L:1246 M:258 W: Mandatory Feature missing, <222> not found for SEQ ID#:11
L:1246 \ M:341 \ W: \ (46) \ "n" \ or "Xaa" \ used, for SEQ ID#:11
L:1249 M:258 W: Mandatory Feature missing, <222> not found for SEQ ID#:11
L:1249 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11
L:1252 M:258 W: Mandatory Feature missing, <222> not found for SEQ ID#:11
L:1252 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11
L:1255 M:258 W: Mandatory Feature missing, <222> not found for SEQ ID#:11
L:1255 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11
L:1258 M:258 W: Mandatory Feature missing, <222> not found for SEQ ID#:11
L:1258 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11
L:1261 M:258 W: Mandatory Feature missing, <222> not found for SEQ ID#:11
L:1261 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11
L:1264 M:258 W: Mandatory Feature missing, <222> not found for SEQ ID#:11
L:1264 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11
L:1267 M:258 W: Mandatory Feature missing, <222> not found for SEQ ID#:11
L:1267 \ M:341 \ W: (46) \ "n" \ or "Xaa" \ used, for SEQ ID#:11
L:1270 M:258 W: Mandatory Feature missing, <222> not found for SEQ ID#:11
L:1270 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11
L:1273 M:258 W: Mandatory Feature missing, <222> not found for SEQ ID#:11
L:1273 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11
L:1279 M:258 W: Mandatory Feature missing, <222> not found for SEQ ID#:11
L:1279 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11
L:1285 M:258 W: Mandatory Feature missing, <222> not found for SEQ ID#:11
\texttt{L}\!:\!1285\ \texttt{M}\!:\!341\ \texttt{W}\!: (46) "n" or "Xaa" used, for SEQ ID#:11
L:1294 M:258 W: Mandatory Feature missing, <222> not found for SEQ ID#:11
L:1294 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11
L:1297 M:258 W: Mandatory Feature missing, <222> not found for SEQ ID#:11
L:1297 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11
L:1309 M:258 W: Mandatory Feature missing, <222> not found for SEQ ID#:11
L:1309 \ M:341 \ W: (46) \ "n" \ or "Xaa" \ used, for SEQ ID#:11
L:1312 M:258 W: Mandatory Feature missing, <222> not found for SEQ ID#:11
L:1312 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11
L:1315 M:258 W: Mandatory Feature missing, <222> not found for SEQ ID#:11
L:1315 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11
L:1318 M:258 W: Mandatory Feature missing, <222> not found for SEQ ID#:11
L:1318 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11
```

**VERIFICATION SUMMARY**PATENT APPLICATION: **US/09/771,382**DATE: 07/25/2001

TIME: 12:36:40

Input Set : A:\8795\_24U1.txt

```
L:1324\ M:258\ W: Mandatory Feature missing, <222> not found for SEQ ID#:11
L:1324 \text{ M}:341 \text{ W}: (46) \text{ "n" or "Xaa" used, for SEQ ID$$\#:$11$}
L:1327 M:258 W: Mandatory Feature missing, <222> not found for SEQ ID#:11
L:1327 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11
L:1330 M:258 W: Mandatory Feature missing, <222> not found for SEQ ID#:11
L:1330 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11
L:1333~M:258~W: Mandatory Feature missing, <222> not found for SEQ ID#:11
L\!:\!1333 M\!:\!341 W\!: (46) "n" or "Xaa" used, for SEQ ID#:11
L:1336 M:258 W: Mandatory Feature missing, <222> not found for SEQ ID#:11
L:1336 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11
L:1339 M:258 W: Mandatory Feature missing, <222> not found for SEQ ID#:11
L:1339 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11
L:2024 M:258 W: Mandatory Feature missing, <222> not found for SEQ ID#:22
\tt L\!:\!2024~M\!:\!341~W\!: (46) "n" or "Xaa" used, for SEQ ID#:22
L:2026\ M:258\ W: Mandatory Feature missing, <222> not found for SEQ ID#:22
L\!:\!2026~M\!:\!341~W\!: (46) "n" or "Xaa" used, for SEQ ID#:22
L:2028\ M:258\ W: Mandatory Feature missing, <222> not found for SEQ ID#:22
L:2028 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:22
L:2030~M:258~W: Mandatory Feature missing, <222> not found for SEQ ID#:22
L:2030 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:22
L:2032 M:258 W: Mandatory Feature missing, <222> not found for SEQ ID#:22
L:2032 \text{ M}:341 \text{ W}: (46) \text{ "n" or "Xaa" used, for SEQ ID$$\#:22$}
L:2034 M:258 W: Mandatory Feature missing, <222> not found for SEQ ID#:22
L:2034 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:22
L:2036 M:258 W: Mandatory Feature missing, <222> not found for SEQ ID#:22
L:2036 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:22
L:2038 M:258 W: Mandatory Feature missing, <222> not found for SEQ ID#:22
L:2038 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:22
L:2040~M:258~W: Mandatory Feature missing, <222> not found for SEQ ID#:22
L:2040 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:22
L:2042 M:258 W: Mandatory Feature missing, <222> not found for SEQ ID#:22
L:2042 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:22
L:2044 M:258 W: Mandatory Feature missing, <222> not found for SEQ ID#:22
L:2044 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:22
L:2046\ M:258\ W: Mandatory Feature missing, <222> not found for SEQ ID#:22
L\!:\!2046 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:22
L:2048\ M:258\ W: Mandatory Feature missing, <222> not found for SEQ ID#:22
L:2048 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:22
L:2052 M:258 W: Mandatory Feature missing, <222> not found for SEQ ID#:22
L:2052 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:22
L:2054 M:258 W: Mandatory Feature missing, <222> not found for SEQ ID#:22
L:2054 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:22
L:2058 M:258 W: Mandatory Feature missing, <222> not found for SEQ ID#:22
L\!:\!2058 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:22
L:2060 M:258 W: Mandatory Feature missing, <222> not found for SEQ ID#:22
L:2060 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:22
L:2062 M:258 W: Mandatory Feature missing, <222> not found for SEQ ID#:22
L:2062 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:22
L:2068 M:258 W: Mandatory Feature missing, <222> not found for SEQ ID#:22
```

VERIFICATION SUMMARY

DATE: 07/25/2001

PATENT APPLICATION: US/09/771,382

TIME: 12:36:40

Input Set : A:\8795\_24U1.txt

Output Set: N:\CRF3\07252001\1771382.raw

 $L\!:\!2068~M\!:\!341~W\!:$  (46) "n" or "Xaa" used, for SEQ ID#:22

L:2070 M:258 W: Mandatory Feature missing, <222> not found for SEQ ID#:22

L:2070 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:22